Appendix 5- Victoria Hospital

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| Patient Number |
| Patient Name |
| Ward Number |
| Ward Name |
| Bed Number |

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| --- | --- | --- | --- | --- | --- | --- |
| Drug Number | Drug Name | Description | Dosage of Admin | Method of Admin | Date of Admin | Time of Admin |
| 234567 | Pencillins | Antibiotic | 1mg/ml | IV | 10/1/15 | 08:45 |
| 023481 | Advil  | Pain Killer | 15mg/ml | Oral | 10/02/15 | 17:26 |

Functional dependencies

The dependencies for bedNo are unclear. If bedNo is a unique number for the entire hospital, it is then possible to suggest bedNo -> wardNo. However, bedNo is more likely to do with the allocation of patients on a waiting list for beds. Therefore, we will assume that a ward determines bedNo.

Dosage is defined as the amount of a drug administered to a patient at a point in time, and method of administration is the same for a given drug.

patientNo -> patientName

wardNo -> wardName, bedNo

wardName -> wardNo, bedNo

drugNo -> drugName, description, methodOfAdmin

patientNo, drugNo, dateOfAdmin, timeOfAdmin -> dosage

**Unnormalized and 1NF**

 **Functional Dependencies**

patientNo -> patientName

wardNo -> wardName, bedNo

wardName -> wardNo, bedNo

drugNo -> drugName, description, methodofAdmin

patientNo, drugNo, dateofAdmin, timeOfAdmin -> dosage

UNF: creating a table that contains repeating groups

1NF: patientNo, drugNo, dateOfAdmin, timeOfAdmin, patientName, wardNo, wardName, bedNo, drugName, description, methodOfAdmin, dosage

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| **UNF** |  |  |  |  |  |  |  |  |  |  |  |
| Patient# | PatientName | Ward# | WardName | Bed# | Drug# | DrugName | Desc | Dosage | Method | AdminDate | AdminTime |
|  |  |  |  |  |  |  |  |  |  |  |  |
| P0001 | John Doe | W01 | Ortho | B12 | 023481 | Advil | pain killer | 1 mg | Oral | 10/1/2015 | 8:54 |
|  |  |  |  |  | 234567 | Penicillins | antibiotic | 2mg | IV | 10/1/2015 | 18:41 |
|  |  |  |  |  | 023481 | Advil | pain killer | 3mg | Oral | 10/2/2015 | 5:30 |
| P0345 | MarySmith | W11 | Pulmonary | B09 | 234567 | Penicillins | antibiotic | 4mg | IV | 10/1/2015 | 8:54 |
|  |  |  |  |  | 023481 | Advil | pain killer | 1mg | Oral | 10/5/2015 | 11:30 |

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| **1NF** |  |  |  |  |  |  |  |  |  |  |  |
| Patient# | PatientName | Ward# | WardName | Bed# | Drug# | DrugName | Desc | Dosage | Method | AdminDate | AdminTime |
|  |  |  |  |  |  |  |  |  |  |  |  |
| P0001 | John Doe | W01 | Ortho | B12 | 023481 | Advil | pain killer | 1 mg | Oral | 10/1/2015 | 8:54 |
| P0001 | John Doe | W01 | Ortho | B12 | 234567 | Penicillins | antibiotic | 2mg | IV | 10/1/2015 | 18:41 |
| P0001 | John Doe | W01 | Ortho | B12 | 023481 | Advil | pain killer | 3mg | Oral | 10/2/2015 | 5:30 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 | 234567 | Penicillins | antibiotic | 4mg | IV | 10/1/2015 | 8:54 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 | 023481 | Advil | pain killer | 1mg | Oral | 10/5/2025 | 11:30 |

Second Normal Form

PatientMed (patientNo, patientName, wardNo, wardName, bedNo, drugNo, drugName, description, dosage, methodOfAdmin, dateOfAdmin, timeOfAdmin)

Functional Dependencies

patientNo -> patientName

wardNo -> wardName, bedNo

wardName -> wardNo, bedNo

drugNo -> drugName, description, methodOfAdmin

patientNo, drugNo, dateOfAdmin, timeOfAdmin -> dosage

PatientMed (patientNo, patientName, wardNo, wardName, bedNo, drugNo, drugName, description, dosage, methodOfAdmin, dateOfAdmin, timeOfAdmin)

patientNo -> patientName, wardNo, wardName, bedNo

drugNo -> drugName, description, methodOfAdmin

patientNo, drugNo, dateOfAdmin, timeOfAdmin -> dosage

PatientReg (patientNo, patientName, wardNo, wardName, bedNo)

Drug (drugNo, drugName, description, methodOfAdmin)

Dosage (patientNo, drugNo, dateOfAdmin, timeOfAdmin, dosage)

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| --- | --- | --- | --- |
| **2NF: PatientReg** |  |  |  |
|  |  |  |  |  |
| **Patient#** | **PatientName** | **Ward#** | **WardName** | **Bed#** |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| **2NF: Drug** |  |  |  |  |
|  |  |  |  |  |
| **Drug#** | **DrugName** | **Desc** | **Method** |
| 023481 | Advil | pain killer | Oral |  |
| 234567 | Penicillins | antibiotic | IV |  |
| 023481 | Advil | pain killer | Oral |  |
| 234567 | Penicillins | antibiotic | IV |  |
| 023481 | Advil | pain killer | Oral |  |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- |
| **2NF: Dosage** |  |  |  |
|  |  |  |  |  |
| **Patient#** | **Drug#** | **AdminDate** | **AdminTime** | **Dosage** |
| P0001 | 023481 | 10/1/2015 | 8:54 | 1mg |
| P0001 | 234567 | 10/1/2015 | 18:41 | 2mg |
| P0001 | 023481 | 10/2/2015 | 5:30 | 3mg |
| P0345 | 234567 | 10/1/2015 | 8:54 | 4mg |
| P0345 | 023481 | 10/5/2015 | 11:30 | 1mg |

Third Normal Form

|  |  |  |  |
| --- | --- | --- | --- |
| **2NF: PatientReg** |  |  |  |
|  |  |  |  |  |
| **Patient#** | **PatientName** | **Ward#** | **WardName** | **Bed#** |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0001 | John Doe | W01 | Ortho | B12 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 |
| P0345 | Mary Smith | W11 | Pulmonary | B09 |
|  |  |  |  |  |

PatientReg (patientNo, patientName, wardNo, wardName, bedNo)

A: patientNo

B: wardNo

C: wardName, bedNo

A-> B and B -> C then A -> B -> C

B is an independent relation

PatientReg (patientNo, patientName, wardNo, wardName, bedNo)

Patient (patientNo, patientName)

Ward (wardNo, wardName, bedNo)

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| --- | --- | --- | --- | --- | --- | --- |
| **3NF: Patient** |  | **3NF:Drug** |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Patient#** | **PatientName** |  | **Drug#** | **DrugName** | **Desc** | **Method** |  |
| P0001  | John Doe |  | 023481 | Advil | pain killer | Oral |  |
| P0001  | John Doe |  | 234567 | Penicillins | antibiotic | IV |  |
| P0001  | John Doe |  | 023481 | Advil | pain killer | Oral |  |
| P0345 | Mary Smith |  | 234567 | Penicillins | antibiotic | IV |  |
| P0345 | Mary Smith |  | 023481 | Advil | pain killer | Oral |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **3NF:Ward** |  | **3NF: Dosage** |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Ward#** | **WardName** | **Bed#** | **Patient#** | **Drug#** | **AdminDate** | **AdminTime** | **Dosage** |
| W01 | Ortho | B12 | P0001 | 023481 | 10/1/2015 | 8:54 | 1mg |
| W01 | Ortho | B12 | P0001 | 234567 | 10/1/2015 | 18:41 | 2mg |
| W01 | Ortho | B12 | P0001 | 023481 | 10/2/2015 | 5:30 | 3mg |
| W11 | Pulmonary | B09 | P0345 | 234567 | 10/1/2015 | 8:54 | 4mg |
| W11 | Pulmonary | B09 | P0345 | 023481 | 10/5/2015 | 11:30 | 1mg |
|  |  |  |  |  |  |  |  |